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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/296,588	04/23/1999	MINHUA LU	YO998-532	8615

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EXAMINER

QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 02/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/296,588

Applicant(s)

LU ET AL.

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The Final Office Action mailed on Jul.12, 2002 is hereby vacated and prosecution is reopened.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 8 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 8 and 15, recitation "at least one of said first-type electrode and said second-type electrode includes a conducting amorphous layer adjacent said liquid crystal material", "at least one of said transmissive electrode and said reflective electrode includes a conducting amorphous diamond-like carbon layer adjacent said liquid crystal material" and "forming a conducting amorphous layer on at least one of said first-type electrode and said second-type electrode adjacent said liquid crystal material" states the amorphous layer is a conducting material.

However, the dependent claims 3, 10 and 17 describe the amorphous layer comprises one of a hydrogenated amorphous carbon silicon, germanium, SiO₂, Si₂N₄, and TiO₂. The amorphous layer does not describe that it is a multiple laminated layers according to the specification. The specification describes (page 6, lines 7-10) the definition of the amorphous layer as such "the amorphous layer is a hydrogenated

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amorphous carbon silicon, germanium, SiO₂, Si₂N₄ or TiO₂". Therefore, the amorphous layer **is one layer** and the material of the amorphous layer **is** hydrogenated amorphous carbon silicon, **or** germanium, **or** SiO₂, **or** Si₂N₄, **or** TiO₂. The silicon oxide (SiO₂) is an insulator and how can be defined a conducting silicon oxide. As Applicant's arguments indicates (Appeal Brief page 9, lines 2-3) that the silicon oxide is modified with carbon, so that the silicon oxide would be changed its insulating characteristics, but that is not described in the specification (does not describe such definition, and that would a new matter in this application) and is not defied in the claims.

The specification describes (page 14, lines 3-12) using **a slightly** conducting thin film, e.g., diamond-like conducting (DLC) film, coated on both the Al and ITO electrodes of reflective LCDs to reduce and stabilize the Vcom shift.

Therefore, the invention would be using a slightly conducting material coated on both the Al and ITO electrode of reflective LCDs and the slightly conducting material is adjacent the liquid crystal material.

Therefore, for examination purpose, the claims 1, 8 and 15 are interpreted as "a slightly conducting amorphous layer", "a slightly conducting amorphous diamond-like carbon layer" and "forming a slightly conducting amorphous layer".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-3, 5, 7-10, 12, 14-17 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,344,888 (Yasukawa).

Claim 1-3, 7-10, 14-17, Yasukawa discloses (col.15, lines 25-52; col.6, line 48 – col.7, line 52; Figs. 7 and 1) that a reflection liquid crystal panel comprising a counter electrode (common electrode) composed of a transparent electrode (ITO) (33), i.e., a first-type electrode or a transmissive electrode; a reflective electrode (pixel electrode 14), i.e., a second-type electrode or a reflective electrode positioned opposite the transmissive electrode (the transmissive electrode is an opposite type of the reflective electrode); and a liquid crystal material (37) between the transmissive electrode (33) and the reflective electrode (14); and a passivation film (17) is formed on the entire pixel electrode (14) which is adjacent the liquid crystal material; and the passivation film (17) is composed of a silicon oxide film.

Because the amorphous layer (or the amorphous carbon layer) comprises a silicon oxide (see the claims 3, 10 and 17 of this application), such that Yasukawa discloses that an amorphous layer comprises of a silicon oxide film as the passivation

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film. Yasukawa indicates (col.7, lines 20-23) that the use of a silicon oxide film as the passivation film (17) covering the pixel region prevents the significant change in a reflectance due to the variation of the film thickness and the wavelength of the light, such that preventing the display flickers. On the other hand, any material has conductivity. Using SiO₂ as the amorphous layer or the amorphous carbon layer as claimed in claims 1, 8 and 15 also have slight conductivity, so that the material also is a conducting (slight conductivity) material. The diamond-like conductive film has a very slight conductivity. Therefore, the material using SiO₂ met the claims 1, 8 and 15.

Claims 5, 12 and 19, Yasukawa discloses (col.7, lines 37-38) that a polyimide alignment film is formed on the entire passivation film (17), i.e., a polyimide layer is formed between the passivation film (as the amorphous layer) and the liquid crystal material.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasukawa as applied to claims 1-3, 5, 7-10, 12, 14-17 and 19 above, and further in view of US 5,990,988 (Hanihara et al).

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Claims 4, 11 and 18, it was common and known in the art as the silicon oxide film has a function to be an alignment film. Hanihara discloses (col.5, lines 52-53) that an alignment film (8) made of silicon oxide is formed on the electrode (7), such that the silicon oxide film has a function to be an alignment film. Because the amorphous layer comprises a silicon oxide, so that the amorphous layer made of silicon oxide has a unidirectional orientation matched to the liquid crystal material. Therefore, an alignment film as claimed in claims 4, 11 and 18 would have been at least obvious.

7. Claims 6, 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasukawa as applied to claims 1-3, 5, 7-10, 12, 14-17 and 19 above, and further in view of Applicant admitted prior art.

Claims 6, 13 and 20, it was common and known in the art as that is a basic principle of the liquid crystal display in which a voltage between the pixel electrode and the common electrode varies the transparency of the liquid crystal material. As the Applicant admitted prior art discloses (col.3, lines 1-4 in the specification) that varying the voltage to the electrode (106) (the pixel electrode) controls the liquid crystal cell (111) such that different amount of light are transmitted across the liquid crystal display (different transparency of liquid crystal material), thus resulting in the display of a gray scale of light. Therefore, a voltage between the transmissive electrode and the reflective electrode varies the transparency of the liquid crystal material as claimed in claims 6, 13 and 20 would have been at least obvious.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 6-13 of U.S. Patent No. 5,764,324 (Lu et al).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims 1-20 of the Application and the claims 6-13 of the U.S. Patent No. 5,764,324 have a very corresponding limitations except a few wording are different, but they substantially have the doctrine of obviousness-type double limitations.

The claims 1-20 of the Application claimed a reflective-type liquid crystal display comprising a transmissive electrode; a reflective electrode; and a liquid crystal material between the transmissive electrode and the reflective electrode; and at least one of the transmissive electrode and the reflective electrode includes a conducting amorphous

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layer (or a conducting amorphous diamond-like carbon layer) adjacent the liquid crystal material, and the conducting amorphous layer (or conducting amorphous carbon layer) comprises a silicon oxide (SiO_2).

The claims 6 –13 of the US 5,764,324 also have such limitations as a liquid crystal cell for a liquid crystal display device comprising a transparent electrode; a reflective electrode; and a liquid crystal material disposed between the transparent electrode and the reflective electrode; and at least one layer of dielectric material disposed between a transparent conductive layer and a reflecting metal layer, and the dielectric material comprises silicon dioxide, such that a silicon oxide film as a passivation film covering the pixel electrode. The material of silicon dioxide (SiO_2) also has a very slight conductivity as a material of diamond-like material. Therefore, the material of silicon dioxide (SiO_2) also can be the material of a conducting (very slight conductivity) amorphous layer.

Response to Arguments

10. Applicant's arguments filed on Jan 13, 2003 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) The independent claims 1, 8 and 15 define "a conducting amorphous layer adjacent the liquid crystal material", "a conducting amorphous diamond-like carbon layer adjacent the liquid crystal material" and "forming a conducting amorphous layer on at

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least one of the first-type electrode and the second-type electrode adjacent the liquid crystal material" respectively.

The references do not teach or suggest such feature, and the references disclose using silicon oxide (SiO_2) as a passivation layer formed on the pixel electrode, and the silicon oxide (SiO_2) is an insulator.

2) The present invention claims "a conducting amorphous layer adjacent the liquid crystal material", "a conducting amorphous diamond-like carbon layer adjacent the liquid crystal material" and "forming a conducting amorphous layer on at least one of the first-type electrode and the second-type electrode adjacent the liquid crystal material" respectively.

The patent US 5,764,324 (Lu et al) using "dielectric material (silicon oxide (SiO_2))" adjacent the reflective electrode, and that is not a conducting material.

3) The paragraph on page (does not indicate which page); lines 10-15, explains that the silicon dioxide layer is changed from an insulator into a conductor using a form of carbon (Appeal Brief page 10, lines 8-9).

Examiner's responses to Applicant's **only** arguments are as follows:

1) Because the amorphous layer (or the amorphous carbon layer) comprises a silicon oxide (see the claims 3, 10 and 17 of this application and the explanation of the 35 U.S.C. 112 rejection above), such that Yasukawa discloses that an amorphous layer comprises of a silicon oxide film as the passivation film. Yasukawa indicates (col.7, lines 20-23) that the use of a silicon oxide film as the passivation film (17) covering the pixel region prevents the significant change in a reflectance due to the variation of the film

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thickness and the wavelength of the light, such that preventing the display flickers. On the other hand, any material has conductivity. Using SiO_2 as the amorphous layer or the amorphous carbon layer as claimed in claims 1, 8 and 15 also have slight conductivity, so that the material also is a conducting (slight conductivity) material. The diamond-like conductive film has a very slight conductivity. Therefore, the material using SiO_2 met the claims 1, 8 and 15.

2) The claims 6 –13 of the patent US 5,764,324 (Lu et al) also have such limitations as a liquid crystal cell for a liquid crystal display device comprising a transparent electrode; a reflective electrode; and a liquid crystal material disposed between the transparent electrode and the reflective electrode; and at least one layer of dielectric material disposed between a transparent conductive layer and a reflecting metal layer, and the dielectric material comprises silicon dioxide, such that a silicon oxide film as a passivation film covering the pixel electrode. The material of silicon dioxide (SiO_2) also has a very slight conductivity as a material of diamond-like material. Therefore, the material of silicon dioxide (SiO_2) also can be the material of a conducting (very slight conductivity) amorphous layer.

3) The specification does not explain that the silicon dioxide layer is changed from an insulator into a conductor using a form of carbon in any page. The specification explains (page 14, lines 3-12) using a slightly conducting thin film, e.g., diamond-like conducting (DLC) film, coated on both the Al and ITO electrodes of reflective LCDs to reduce and stabilize the Vcom shift. The specification does not describe how to use a

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form of carbon to change an insulator such as silicon dioxide (SiO₂) into a conductor,
and that would be a new matter for this application.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
January 31, 2003

